CO/NO_2 CALIBRATION KIT

MODEL GDT-CALKIT-CNC

The GDT-CALKIT-CNC is a kit to correctly test or calibrate the Toxic Gas sensor, CO detectors and NO_2 detectors. The GDT-CALKIT-CNC includes:

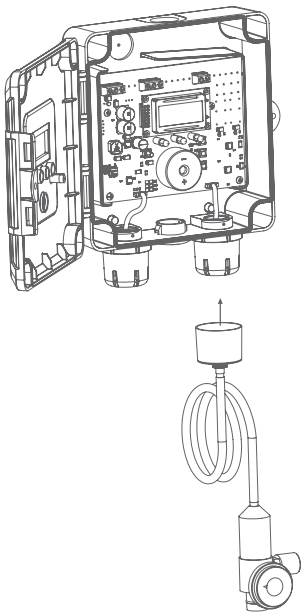
- Tubing
- Regulator
- Calibration Cap 1 (GDT Series)
- Calibration Cap 2 (CMD/NDD Series)
- Carrying Case
- Sponge (For CO only)

Note: Calibration Gas is not included. To be purchased locally.

Calibration Gas Requirements (103 liter tanks):
250ppm CO in air,
10ppm NO_2 in air

PRE-CALIBRATED SENSOR REPLACEMENT:

The sensor features a gas sensor POD that is pre-calibrated. This means that the POD can simply be replaced with a new calibrated POD if desired without having to remove the enclosure and the main processor board. This sensor swap can be completed in seconds. Simply unplug the POD cable connection from the main board in enclosure, remove the POD by unscrewing counterclockwise, install the POD by screwing it in clockwise and reconnect the POD cable to connector on main PCB. There is no need to make any adjustments or apply gas to the transmitter using the sensor swap method.



CALIBRATION:

The device may also be calibrated or verified with the CO or NO_2 gas if required. This requires a field calibration kit consisting of a bottle of gas, a tank pressure regulator with flow restrictor and the necessary tubing with a calibration cap to cover to the sensor. Calibration can be done at 20 to 27°C.

Verification with gas can be done without removing the device cover. For surface mount products, simply apply gas using the calibration cap over the POD to be calibrated. See the below images for reference.

The sensor must be continuously powered for at least 1/2 hour prior to calibration. To put device into calibration mode the cover on main unit should be opened. Press and release the <Menu> key to enter the Setup Menu. Continue to press the menu key and release to step through choices until the CO (or NO_2) Calibration screen is shown.

CO Zero Cal GO

The following section describes how to calibrate for the CO sensor. Ensure the sensor is in clean air. Press and hold the <UP> key for 3 seconds to initiate the calibration process. When the calibration is complete, the display will indicate DONE. Then press <MENU> to advance to the next selection. A CO Zero Calibration Counter is incremented every time this step is performed. The CO ReCal timer is reset whenever this step is performed. Attach to the 250 ppm CO gas bottle to the regulator and firmly tighten it by hand. Moisten the sponge and squeeze out any excess water. Place the sponge in the cap so it does not plug the hole in the side of the cap. Install cap over the CO Pod to be calibrated. Turn on the regulator to begin gas application. Wait 3-5 minutes for sensor to stabilize, then press and hold the <UP> key for 3 seconds to initiate the calibration process. When the calibration is complete, the display will indicate DONE. Then press <MENU> to advance to the next selection. A CO 250 Calibration Counter is incremented every time this step is performed. The CO Re-Cal timer is reset whenever this step is performed. If reading is not within +/- 10% of expected value the unit will not calibrate and report a failure.

NO2 Zero Cal GO

The following section describes how to calibrate for the NO_2 sensor. Ensure the sensor is in clean air. Press and hold the <UP> key for 3 seconds to initiate the calibration process. When the calibration is complete, the display will indicate DONE. Then press <MENU> to advance to the next selection. A NO_2 Zero Calibration Counter is incremented every time this step is performed. NO_2 Re-Cal timer is reset whenever this step is performed. Attach to the 10 ppm NO_2 gas bottle to the regulator and firmly tighten it by hand. Sponge should not be used for NO_2 gas. Install cap over the NO_2 Pod to be calibrated. Turn on the regulator to begin gas application. Wait 3-5 minutes for sensor to stabilize, then press and hold the <UP> key for 3 seconds to initiate the calibration process. When the calibration is complete, the display will indicate DONE. Then press <MENU> to advance to the next selection. A NO_2 10 Calibration Counter is incremented every time this step is performed. The NO_2 Re-Cal timer is reset whenever this step is performed.

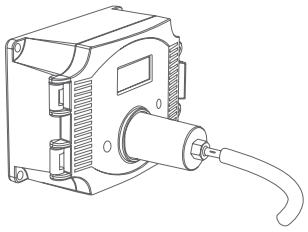
CMD SERIES CO DETECTORS

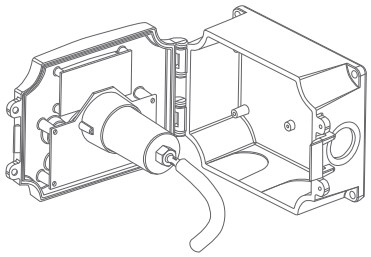
PRE-CALIBRATED SENSOR REPLACEMENT

The CO transmitter features a cover mounted sensor PCB that is pre-calibrated. This means that the entire sensor PCB can simply be replaced with a new calibrated PCB if desired without having to remove the enclosure and the main processor board. This sensor swap can be completed in seconds. Simply unplug the device ribbon cable connection, remove the old sensor PCB, install the new PCB and reconnect the ribbon cable. There is no need to make any adjustments or apply gas to the transmitter using the sensor swap method. In this case, the Fault Mode should be reset if it is enabled.

CALIBRATION

The device may also be calibrated or verified with the CO gas if required. This requires a field calibration kit consisting of a bottle of gas (250 ppm CO in air for example), a tank pressure regulator with flow restrictor and the necessary tubing with a calibration cap to cover to the sensor. Calibration can be done at 20 to 27°C. Verification with gas can be done without removing the device cover. For surface mount products, simply apply gas using the calibration cap attached directly to the port on the cover and monitor the output signal or LCD. For the duct type sensors, the device cover must be opened to perform an actual calibration. See the below images for reference.





The sensor must be continuously powered for at least 1/2 hour prior to calibration. Calibrate the sensor first in clean air with no CO gas present. Simply adjust the ZERO pot on the sensor board until 4 mA (or 0 Vdc) output is obtained and the LCD displays 0 ppm. Note that the "0 Filter" menu item should be disabled to set the 0 ppm. The ZERO and SPAN pots are located on the edge of the cover sensor PCB and are clearly marked on the PCB.

Then attach the gas supply. Turn the regulator on/off knob fully off and attach it to the 250 ppm gas bottle and firmly tighten it by hand. Moisten the sponge and squeeze out any excess water. Place the sponge in the cap so that it will not touch the sensor but does not plug the hole in the side of the cap. Attach the cap to the fixture over the sensor. If the gas cap is too loose on the fixtures, simply place a wrap of electrical tape around the cap the tighten. Slowly turn the valve knob on the regulator to let the gas begin flowing.

The regulator will restrict the flow rate to the specified 200 ml/min and the sponge will ensure the gas is in the right humidity range. Wait for 5 minutes and then adjust the SPAN pot on the sensor board until the output and LCD reads 250 ppm. Close the valve on the tank and take a cap off from the sensor. Calibration is complete. In this case, the ReCal Mode should be reset if it is enabled.

CMD SERIES ECONOMY CO DETECTORS

PRE-CALIBRATED SENSOR REPLACEMENT

The CO transmitter features a simple snap-mount pre-calibrated sensor PCB. You can replace the entire sensor PCB with a new calibrated PCB without the removal of the enclosure. This sensor swap requires no tools and you can complete it in seconds. Disconnect the device wiring, remove the old sensor PCB, snap in the new PCB, and reconnect the device power. There is no need to make any adjustments or apply gas to the transmitter using the sensor swap method.

CALIBRATION

If necessary, calibrate the device or verify with CO gas. This requires a field calibration kit that consists of a bottle of gas, for example, 250 ppm CO in air, a tank pressure regulator with flow restrictor, and the necessary tubing with a calibration cap to cover the sensor. You can calibrate at 68°F to 81°F (20°C to 27°C).

You can verify with gas without the removal of the device cover. Use the calibration cap attached directly to the port on the cover to apply gas and monitor the output value. See Figure 1. Remove the device cover to perform an actual calibration. In this case, the gas calibration cap attaches to the sensor fixture inside the enclosure. See Figure 2.

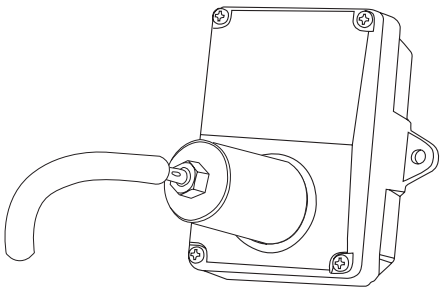


Figure 1. Calibration cap attached to external cover port

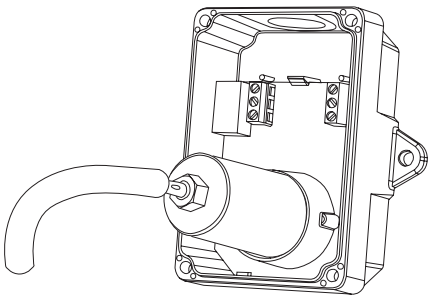


Figure 2. Calibration cap attached to internal sensor fixture

For local display, on a device with a 0 VDC to 10 VDC output, use a voltmeter to measure between the OUT and COM terminals to measure the output. For a device with 4 mA to 20 mA, place an ammeter in series of the output. Disconnect the signal wire from the OUT terminal of the CO sensor. Connect the + lead of the ammeter to the OUT terminal of the CO sensor and connect the COM lead of the ammeter to removed signal wire. Set ammeter to read a 20 mA signal. Continuously power the sensor for at least 30 min prior to calibration. To calibrate the sensor, complete the following steps:
Procedure

1. Calibrate the sensor first in clean air with no CO gas present. Adjust the ZERO pot on the sensor board until you obtain a 0 VDC or 4 mA output depending on device. For this case, adjust the output slightly above 0 VDC or 4 mA and slowly reduce the output signal to 0 VDC or 4 mA, depending on the device.
2. Monitor the output signal with the voltmeter or ammeter that connects to the OUTPUT and COMMON terminals.
3. Attach the gas supply.
4. Turn the regulator on/off knob fully off and attach it to the 250 ppm gas bottle and firmly tighten it by hand.
5. Moisten the sponge and squeeze out any excess water.
6. Place the sponge in the cap so that it does not touch the sensor and does not plug the hole in the side of the cap.
7. Attach the cap to the fixture over the sensor.
8. Slowly turn the valve knob on the regulator to let the gas flow. The regulator restricts the flow rate to the specified 200 ml per min and the sponge ensures the gas is in the right humidity range.
9. Wait for 5 min and adjust the SPAN pot on the sensor board until the output value reads 250 ppm. For the 0 ppm to 300 ppm device span, 250 ppm equals 8.33 VDC or 17.33 mA, depending on the model.
10. Close the valve on the tank and take the cap off from the sensor. This completes calibration.
11. If the gas cap is too loose on the fixtures, wrap electrical tape around the cap to tighten it.

NDD SERIES ECONOMY NO2 DETECTORS

PRE-CALIBRATED SENSOR REPLACEMENT

The NO_2 transmitter features a simple snap-mount pre-calibrated sensor PCB. You can replace the entire sensor PCB with a new calibrated PCB without the removal of the enclosure. This sensor swap requires no tools and you can complete it in seconds. Disconnect the device wiring, remove the old sensor PCB, snap in the new PCB, and reconnect the device power. There is no need to make any adjustments or apply gas to the transmitter using the sensor swap method.

CALIBRATION

If necessary, calibrate the device or verify with NO_2 gas. This requires a field calibration kit that consists of a bottle of gas, for example, 10 ppm NO_2 in air, a tank pressure regulator with flow restrictor, and the necessary tubing with a calibration cap to cover the sensor. You can calibrate at 68°F to 81°F (20°C to 27°C).

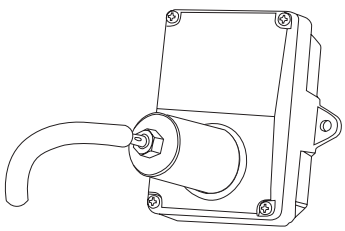


Figure 1. Calibration cap attached to external cover port

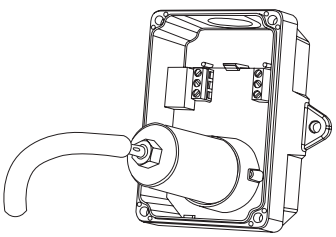


Figure 2. Calibration cap attached to internal sensor fixture

You can verify with gas without the removal of the device cover. Use the calibration cap attached directly to the port on the cover to apply gas and monitor the output value. See Figure 1. Remove the device cover to perform an actual calibration. In this case, the gas calibration cap attaches to the sensor fixture inside the enclosure. See Figure 2.

For local display, place an ammeter in series of the output. Disconnect the signal wire from the OUT terminal of the NO_2 sensor. Connect the positive lead of the ammeter to the OUT terminal of the NO_2 sensor and connect the COM lead of the ammeter to the removed signal wire. Set ammeter to read a 20 mA signal.

Continuously power the sensor for at least 30 min prior to calibration. To calibrate the sensor, complete the following steps:

PROCEDURE

1. Calibrate the sensor first in clean air with no NO_2 gas present. Adjust the ZERO pot on the sensor board until you obtain a 4 mA output.
2. Attach the gas supply.
3. Turn the regulator on/off knob fully off and attach it to the 10 ppm NO_2 gas bottle and firmly tighten it by hand.
4. Attach the cap to the fixture over the sensor.
5. Slowly turn the valve knob on the regulator to let the gas flow.
6. Calibrate the sensor either by applying SPAN gas with a flow rate of 0.5 L to 1 L per minute or wait 2 min and adjust the SPAN pot on the sensor board until you obtain a 20 mA output.
7. Note: The SPAN gas does not have to be the full scale concentration, but could be a fraction of this. A half-scaled concentration of 5 ppm provides a 12 mA signal.
8. Close the valve on the tank and take the cap off from the sensor. This completes calibration.
9. If the gas cap is too loose on the fixtures, wrap electrical tape around the cap to tighten it.

RoHS COMPLIANT MADE IN CANADA ISO9001 CE

PRINTED IN CANADA OM-BL-GDTCALKITCNC-03